


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2004CH106	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/IB2005/000311	International filing date (day/month/year) 04.02.2005	Priority date (day/month/year) 17.02.2004	
International Patent Classification (IPC) or national classification and IPC INV. C08K3/22 C08K5/098 C08L23/02 C08K3/18			
Applicant CLARIANT INTERNATIONAL LTD et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 05.09.2005		Date of completion of this report 22.05.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Russell, G Telephone No. +49 89 2399-8738	



IAP12 Rec'd PCT/PTO 17 AUG 2006

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**International application No.
PCT/IB2005/000311**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on
- ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-8 as originally filed

Claims, Numbers

1-6 received on 05.09.2005 with letter of 01.09.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**International application No.
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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	1-6
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

2. Citations and explanations (Rule 70.7):**see separate sheet**

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/IB2005/000311**Paragraph V:**

1. Relevant cited prior art:

D1: US-A-4 594 382

D2: GB-A-1 080 619

D3: US-A-3 168 505

D4: US-A-4 284 762

D5: DATABASE WPI Section Ch, Week 197722 Derwent Publications
Ltd., London, GB; Class A17, AN 1977-38833Y & JP-A-52 049258

2. Novelty and inventive step

- 2.1 D1 relates to thermally stabilized carboxyl-containing ethylene copolymers containing contains a hydrated compound which dehydrates above 100°C to give improved melt flow when heated (claim 1). The ethylene copolymer comprises up to 5 wt.-% of the composition, preferably 0.01-0.45, more preferably 0.1-0.15 wt.-% of the hydrate compound (col. 1, l 60-68; claims 1, 11) and includes hydrated metallic salts of organic acids, inorganic hydrates, bimetallic hydrates and combinations of any of such hydrates (claims 4, 6, 10).

A method is also described composition adding said hydrate compound to an olefinic copolymer at high temperature, melt mixing and extruding (Examples; claim 19).

Specifically mentioned examples of hydrates include trisodium citrate dihydrate, sodium tartrate dihydrate, potassium citrate, potassium tartrate, potassium sodium tartrate, calcium tartrate, magnesium citrate dibasic, sodium ammonium phosphate tetrahydrate, calcium phosphate dibasic hydrate, calcium phosphate monobasic, magnesium phosphate dibasic dihydrate, magnesium phosphate dibasic trihydrate, magnesium ammonium phosphate, sodium phosphate tribasic, and $\text{NaKHPO}_4 \cdot 7\text{H}_2\text{O}$ (cols. 3 & 4; Table V, Examples 7-9, 14-18; claims 4-6, 10).

None of these hydrate compounds fall under the scope of claim 1 of the specification.

D2 describes a process for producing polyolefin compositions in expanded or cellular form produced by incorporating in the foam in high amounts of 0.1 to 20 wt.-% of a hydrated salt of a Group 1A and 2A metal, the anion of the salt being phosphate, acid phosphate, sulfate, hypophosphite, chromate, tartrate, acid tartrate, citrate, acid citrate, acetone, lactate or borate, and heating (pg. 2, l 63-67; claims). Preferred hydrates include calcium tartrate hydrate, sodium tartrate tetrahydrate, and

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potassium citrate monohydrate (Examples 11 & 12; claims 8, 10, 11). None of these compounds fall under those claimed by the application. The specific phosphorous compounds of claim 1 are not specifically mentioned.

- 2.2 The disclosures D3 to D5 are concerned with reducing colouration in polyolefin resins, while D1 and D2 do not appear to address this problem.

D4 relates to inhibiting corrosion and discolouration of olefin polymers contaminated with halogenated catalyst residues by using a specific hydrotalcite.

D5, similarly to D4, describes rust-preventing, anti-yellowing polyolefin compositions comprising an alkaline earth metal aluminium hydrated hydroxide compound compounded with polyolefin prepared using Ziegler catalyst. The compositions gives good rust prevention and resistant to yellowing.

In D3 polyolefins following the polymerization are treated in an aqueous phase with an alkali metal salt of a weak to moderately strong acid, the alkali metal salt being used in an amount of 0.05-0.5% calculated on the polyolefin mass. Salts which may successfully be used, there may be mentioned more especially: sodium or potassium acetate, sodium pyrophosphate, disodium. hydrogen phosphate, sodium polyphosphates, alkali metal propionates, alkali metal carbonates and alkali metal borates.

Treated polyolefin products are described as being colourless (Example 2 employs sodium pyrophosphate). There is no suggestion the hydrated compounds as claimed in claim 1 of the application.

- 2.3 Therefore, the subject-matter of claims 1 to 6 can be considered to be novel in the sense of Article 33(2) PCT.
- 2.4 D3 appears to represent the closest prior art among the cited documents, as it employs similar compounds to those preferred in the current specification (e.g., sodium pyrophosphate) to provide polyolefin compositions of good colour properties. D3 apparently does not consider explicitly hydrated compounds, however, and the polyolefins are treated in the aqueous phase rather than under melt conditions leading to the release of water from the hydrated compounds.

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Thus, the inventive concept underlying the application does not seem to be rendered obvious by the cited prior art.

Hence, claims 1 to 6 are considered to involve an inventive step in the sense of Article 33(3) PCT.

Printed: 27/12/2005

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Replacement sheet

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CLAIMS

- 5 1. Polyolefin composition comprising a water releasing additives in concentrations from 0.01 to 0.07 weight percent, based on the weight of the polyolefin mass wherein the water releasing additive is selected from $K_2HPO_4 \cdot 3H_2O$, $K_4P_2O_7 \cdot 3H_2O$, $NaH_2PO_4 \cdot H_2O$, $NaH_2PO_4 \cdot 2H_2O$, $Na_2HPO_4 \cdot 2(H_2O)$, $Na_2HPO_4 \cdot 12H_2O$, $Na_2HPO_4 \cdot 7H_2O$, $Na_3PO_4 \cdot 12H_2O$, $Na_4P_2O_7 \cdot 12H_2O$, $Na_2HPO_4 \cdot 5H_2O$.
- 10 2. Polyolefin composition according to claim 1 wherein the additive is a blend of a water releasing additive according to claim 1 with calcium stearate or zinc stearate or DHT4A in a blend ratio from 10:90 to 90:10 by weight.
- 15 3. A process for the prevention of discoloration in polyolefins characterized by the addition of a water releasing additive as characterized in claims 1 to 2 to a polyolefine in concentrations from 0.01 to 0.07 weight percent, based on the weight of the polyolefin mass.
- 20 4. A process according to claim 3 wherein the water releasing additives are added to the polyolefin polymer formed in any polymerization process prior to devolatilization and/or melt extrusion and pelletizing thereof.
- 25 5. A process according to claim 3 wherein the water releasing additives are incorporated into the molten polymer mass by means of a melt mixing process, preferably in the form of a concentrate or masterbatch.
6. Use of polyolefin composition as characterized in claims 1 to 5 for the prevention of discoloration in polyolefins.

Printed: 27/12/2005

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Express Mail Label Number ED 794122336 USIN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Christoph KROEHNKE, et al. : Attorney Docket: 2004CH106

Serial No.: TBA :

Filed: August 17, 2006 :


For: Polyolefin Compositions Comprising Hydrated Inorganic or Organic
Compounds For The Prevention of DiscolorationTransmittal LetterNotification of Amendments Under PCT Article 34Mail Stop:
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Preliminary to the examination of the above-identified application, an Amendment was filed under Article 34 of the Patent Cooperation Treaty prior to the International Preliminary Examination. Please note that the attached page 9, claims 1-6, were filed with the European Patent Office.

Applicant respectfully requests submission of this page before examination of the application and before entry of the Preliminary Amendment.

Respectfully submitted,


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CLAIMS

1. Polyolefin composition comprising a water releasing additives in concentrations
5 from 0.01 to 0.07 weight percent, based on the weight of the polyolefin mass
wherein the water releasing additive is selected from $K_2HPO_4 \cdot 3H_2O$,
 $K_4P_2O_7 \cdot 3H_2O$, $NaH_2PO_4 \cdot H_2O$, $NaH_2PO_4 \cdot 2H_2O$, $Na_2HPO_4 \cdot 2(H_2O)$,
 $Na_2HPO_4 \cdot 12H_2O$, $Na_2HPO_4 \cdot 7H_2O$, $Na_3PO_4 \cdot 12H_2O$, $Na_4P_2O_7 \cdot 12H_2O$,
10 $Na_2HPO_4 \cdot 5H_2O$.
2. Polyolefin composition according to claim 1 wherein the additive is a blend of a
water releasing additive according to claim 1 with calcium stearate or zinc
stearate or DHT4A in a blend ratio from 10:90 to 90:10 by weight.
- 15 3. A process for the prevention of discoloration in polyolefins characterized by the
addition of a water releasing additive as characterized in claims 1 to 2 to a
polyolefine in concentrations from 0.01 to 0.07 weight percent, based on the
weight of the polyolefin mass.
- 20 4. A process according to claim 3 wherein the water releasing additives are added
to the polyolefin polymer formed in any polymerization process prior to
devolatilization and/or melt extrusion and pelletizing thereof.
- 25 5. A process according to claim 3 wherein the water releasing additives are
incorporated into the molten polymer mass by means of a melt mixing process,
preferably in the form of a concentrate or masterbatch.
6. Use of polyolefin composition as characterized in claims 1 to 5 for the prevention
of discoloration in polyolefins.